

Virginia

Underground Utility Marking Standards



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Prepared by
Virginia State Corporation Commission
Division of Utility and Railroad Safety

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Forward

Damage to underground facilities can cause far-reaching consequences, from serious injury and environmental damage to the loss of vital services we depend upon everyday. Preventing damage to these facilities is a responsibility shared by all stakeholders and is accomplished through various damage prevention measures.

At the heart of any damage prevention program is the exchange of accurate and consistent information between excavators and operators of underground facilities. Locating and marking underground facilities is the way operators show the approximate horizontal location of their facilities in advance of an excavation. This information helps the excavators to safely excavate around underground facilities.

In an effort to enhance the current marking practices and encourage the use of uniform marking symbols across Virginia, stakeholder representatives have agreed on a set of marking best practices that are found in this document. All participants in this effort are to be complimented on their dedication and contributions in devising these best practices. Operators and their locators are strongly encouraged to follow these best practices to mark their facilities.

This document also includes a reproduction of the State Corporation Commission's General Marking Requirements (Rule 20 VAC 5-309-110) which must be followed when marking underground utilities in Virginia. This reproduction is provided solely as a convenience for the person or persons reading this document and is not a legal reference. Persons seeking a legal reference should utilize 20 VAC 5-309-110 of the Virginia Administrative Code itself.

Nothing contained in the description of the best practices herein is intended to supersede the existing State law or Commission regulations. The State Corporation Commission does not assume any responsibility for the acts or conduct of any reader of this document

Some of the information in this document is subject to change without notice.

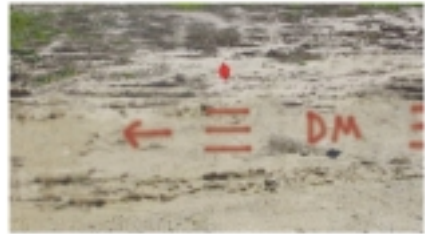
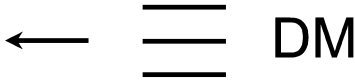
Virginia

Underground Utility Marking Best Practices

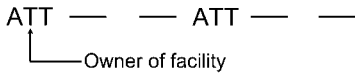
1. The American Public Works Association's ("APWA") color codes shall be used to mark underground utility lines. Unless otherwise noted, marks shall be placed as closely over the utility line as possible consistent with the State Corporation Commission's Rule 20 VAC 5-309-110 M (See page 9).
2. Markings shall be adequate for its intended purpose and not be excessive or oversized.
3. The marker types that are most suitable to the terrain and site conditions shall be used. Examples: Flags and stakes in landscaped areas, snow or loose soil; flags, stakes or whiskers in high traffic areas.



4. Arrows shall be used to indicate that the utility line continues outside the ticket area but shall not be relied upon as to the direction of the utility line.



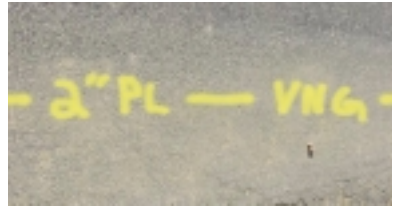
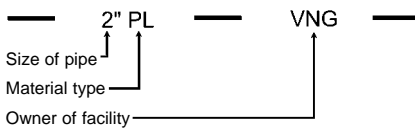
5. The owner of a Utility line shall be indicated by a letter or letters, designated by the State Corporation Commission, utilizing the APWA color codes. These letters shall be legible and placed at the beginning and end of the locate and at sufficient intervals through out the locate.



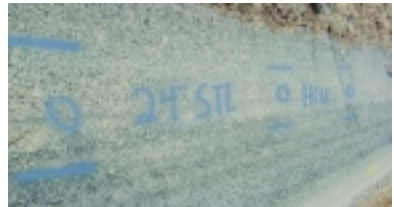
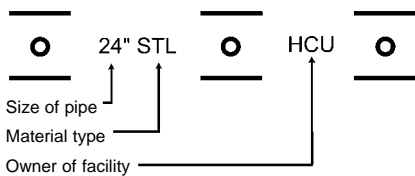
6. When permitted by the operator's records, all utility lines of the same type in the same trench owned by the same operator shall be marked individually or by a single mark. If a single mark is used, the number of the utility lines shall be indicated at every other mark (Commission Rule 20 VAC 5-309-110 L See page 9).



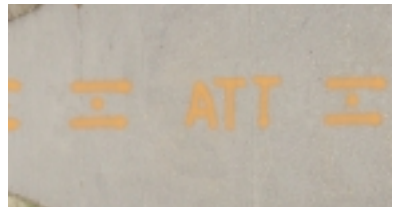
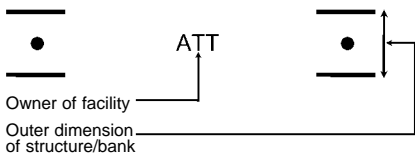
7. When known, the size and material type of the underground pipelines whose nominal outside dimensions are 2-inches or greater but less than 12-inches shall be indicated at every other mark.



8. Pipelines of 12-inches and larger in nominal outside dimension shall be marked as follows:



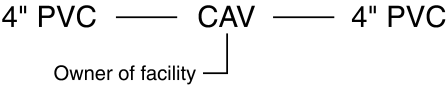
9. To mark a conduit structure or duct bank, the following symbol shall be used:



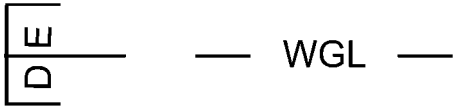
10. In situations where multiple conduits/ducts which are owned and/or operated by different operators are placed together in a bundle fashion, a conduit structure or duct bank marking symbol shall be used by the first operator marking the facility. Other operators owning facilities within the bundle shall verify the marks and add their operator letter designation.



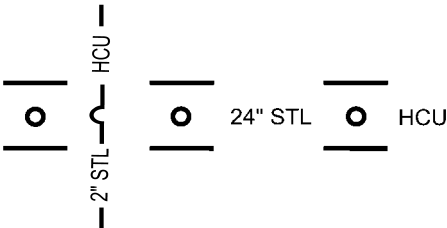
11. When known, the size and material type of a single conduit or duct shall be indicated at every other mark. When size or material type is not known, the conduit or duct shall be marked with the known information and letter “C” at every other mark. If neither size nor material is known, the conduit or duct shall be marked with a letter “C” at every other mark.



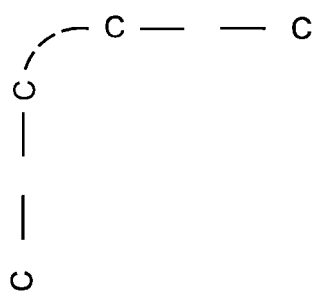
12. Termination points, stub outs, and dead ends shall be marked as follows:



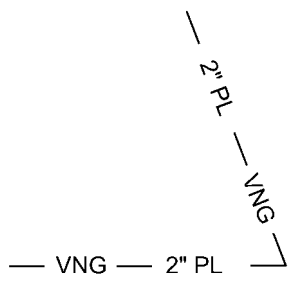
13. Similar utility line crossings with no turns or splices shall be shown by a “hump” crossing over the other utility. Note: The hump does not indicate which line is on top.



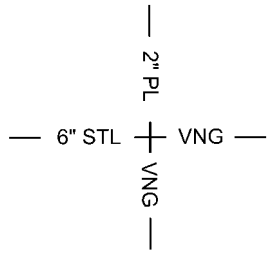
14. Changes in direction and lateral connection to the underground utility lines shall be clearly indicated. On changes in direction, marks shall be placed closer together to show accurately the changes in direction. On lateral connections, marks shall show where the connection exists and the direction of the lateral.



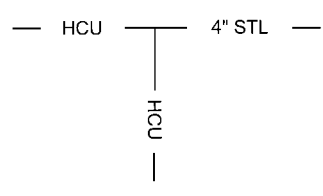
Change in direction



Change in direction



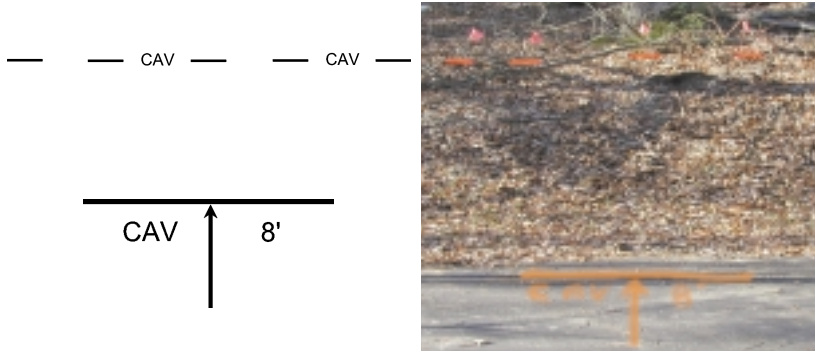
Cross Connection



Lateral Connection



15. In areas where marks may be destroyed (high traffic areas, gravel areas, dirt areas, etc.), or where surface conditions are such that the placement of marks directly over the utility line is not possible, offset markings shall be used. The offset marks should be placed on a permanent surface, which is not likely to be destroyed. When possible, offset marks shall be used in conjunction with marks placed in accordance with (1) above. Offset marks shall include an arrow, pointing in the direction of the utility line, with the distance in feet (measured with an appropriate instrument) to the location of the utility line shown on the right side of the arrow, and size, material type and other information on the left side of the arrow.



16. Valve box covers that are at grade and visible shall be marked with the appropriate color in accordance with the Act (Commission Rule 20 VAC 5-309-110 F See page 8). Manhole perimeter, if known, shall be marked. Manhole covers and other surface indicators (test station covers, etc.) shall be marked with the appropriate color, if necessary.



17. Marking errors shall be corrected by the locator/operator and communicated to the excavator as soon as possible after the discovery of such errors. Appropriate methods shall be used to remove or cover up the erroneous markings (Example: black paint may be used to cover up erroneous markings on paved areas). In the event of a utility line damage, marking errors shall be preserved in the vicinity of the damaged area of the utility line, if possible, until such marks are documented.

18. The locator shall completely and accurately document markings of utility lines. Documentation shall include, at a minimum:
- a. Date manifest was prepared
 - b. Ticket number
 - c. Address where markings were placed
 - d. Time locate was completed
 - e. A clear sketch of markings with measurements to permanent reference points
 - f. Facility type marked
 - g. Size of utility line (if known)
 - h. Utility line material type (if known)
 - i. Marking types (flags, paint, stakes, etc.)
 - j. Marking symbols used
 - k. Locator's signature
19. Designer ticket marking symbols shall be the same as excavation ticket marking symbols.
20. The following definitions and utility line material type abbreviations shall be used with the above marking Best Practices.

Definitions

Conduit/duct - A single enclosed raceway (channel, tube, or cylinder) containing one or more lines or cables.

Conduit structure/duct bank - A structure containing two or more conduits/ducts.

Division - The State Corporation Commission's Division of Utility and Railroad Safety

Operator - Any person who owns, furnishes or transports materials or services by means of a utility line.

Pipelines - Underground utility lines used for the transportation of hazardous liquid, steam, water, sewer, storm and gaseous materials.

Material Type Abbreviations

CICast iron

CPRCopper

DIDuctile iron

PLPlastic

PVCPolyvinyl chloride

RFCReinforced concrete

SCCSteel cylinder concrete

STLSteel

TCTerracotta

TRTransite

W/STLWrapped steel



State Corporation Commission

Rule 20 VAC 5-309-110. General Marking Requirements

- A. All markings shall be suitable for their intended purpose for a period of 15 working days beginning at 7:00 a.m. on the next working day following notice by the excavator to the notification center.
- B. Markings shall be made at sufficient intervals to clearly indicate the approximate horizontal location and direction of the underground utility line. However, the distance between any two marks indicating the same utility line shall not exceed 20 feet. Site conditions or directional changes of the underground utility line shall be considered to determine the need for shorter distance between marks.
- C. Markings of underground utility lines shall be by means of stakes, paint, flags, or combination thereof. The terrain, site conditions, and the type and extent of the proposed excavation shall be considered to determine the most suitable means to mark underground utility lines.
- D. Paint marks shall be approximately 8 to 10 inches in length and one to two inches in width except when "spot" marking is necessary.
- E. A minimum of three separate marks shall be made for each underground utility line marking.
- F. Valve box covers that are at grade and visible shall be marked with the appropriate color in accordance with the Act.
- G. If in the process of marking an underground utility line, a customer-owned underground utility line of the same type is discovered, the operator or its contract locator shall make a reasonable effort to contact the excavator or the customer to advise of the presence of the line.
- H. Where the proposed excavation crosses an underground utility line, markings shall be at intervals that clearly define the route of the underground line.
- I. All markings shall extend if practical, a reasonable distance beyond the boundaries of the specific location of the proposed work as detailed on the ticket.
- J. If the use of line marking is considered damaging to property (driveways, landscaping, historic locations to the extent boundaries are known), "spot" marking or other suitable marking methods shall be used.

- K. Markings shall be valid for an excavation site for 15 working days beginning at 7:00 a.m. on the next working day following notice to the notification center by the excavator or until one of the following events occurs:
1. The markings become faded, illegible or destroyed; or
 2. If the markings were placed in response to an emergency and the emergency condition has ceased to exist.
- L. Where permitted by the operator's records, all utility lines of the same type in the same trench owned by the same operator shall be marked individually or by a single mark. If a single mark is used, the number of the utility lines shall be indicated at every other mark.
- M. Operators or their contract locators shall use all information necessary to mark their facilities accurately.
- N. Markings of an underground pipeline greater than 12 inches in nominal outside dimension shall include the size in inches at every other mark.
- O. Duct structures and conduit systems shall be marked in accordance with the horizontal marking symbols for such structures and conduit systems as shown in item nine of the Virginia Underground Utility Marking Best Practices as provided in the Virginia Underground Utility Marking Standards (March 2004) published by the division (http://www.state.va.us/scc/division/urs/mutility/va_uums.pdf).
- P. In areas where marks would be destroyed, offset markings shall be made using horizontal marking symbols as shown in item 15 of the Virginia Underground Utility Marking Best Practices as provided in the Virginia Underground Utility Marking Standards (March 2004) published by the division (http://www.state.va.us/scc/division/urs/mutility/va_uums.pdf).
- Q. The assigned letter designations for each operator to be used in conjunction with markings of underground utility lines shall be the same as those assigned by the notification center certified for a geographic area, subject to the review of the same and approval of such designations in writing by the advisory committee. Such approved designations by the advisory committee shall be deemed final unless appealed to the commission within 30 days of the advisory committee's written evidence of approval. Operators wishing to appeal the letter designations assigned in accordance with this section may file an appropriate formal pleading with the commission seeking review of the assigned letter designation within 30 days of the issuance of the written approval of the advisory committee.
- R. The symbols for marking of underground utility lines in compliance with §56-265.19 F(ii) of the Act shall be the same as those shown in the Virginia Underground Utility Marking Standards (March 2004) published by the division (http://www.state.va.us/scc/division/urs/mutility/va_uums.pdf).

Miss Utility's Ticket Information Exchange System
Locator Response Codes/Subcodes

Codes:

- 10 Marked; Utilities within the proposed excavation area have been marked.
- 11 Marked; abandoned utility lines may be in the area.
- 12 Marked up to privately owned utility. Contact private utility owner for locate.
- 13 Marked up to privately owned utility. Contact private utility owner for locate. Abandoned utility lines may be in the area.
- 20 Clear, no facilities.
- 21 Clear, abandoned utility lines may be in the area.
- 22 Clear, privately owned utility on property. Contact private utility owner for locate.
- 23 Clear, privately owned utility on property. Contact private utility owner for locate. Abandoned utility lines may be in the area.
- 30 No conflict. Utility is outside of stated work area.
- 31 No conflict. Utility is out of stated work area. Abandoned utility lines may be in the area.

Subcodes:

- 40 Agree to meeting as proposed by excavator.
- 42 Mutually agreed to alternative meeting time and location.
- 50 Installation records, maps or other documents have been provided.
- 60 Ongoing job. Locator and excavator established marking schedule.
- 61 Ongoing job. Locator and excavator establishing marking schedule. Abandoned utility lines may be in the area.
- 70 Critical facility marked. Locator or utility operator must contact excavator and must be present during excavation (See page 11 for policy on this subcode).
- 71 Critical facility not marked. Locator or utility operator must contact excavator and must be present during excavation (See page 11 for policy on this subcode).
- 90 Locator could not gain access to property. Locator will contact excavator (See page 11 for policy on this subcode).
- 91 Incorrect address information. Please call Miss Utility and provide correct information.
- 92 Unrestrained animal in yard. Locator will contact excavator.
- 93 Scope of work is too large. Please call Miss Utility to reschedule.
- 94 Marking instructions are unclear. Please call Miss Utility to reschedule.
- 95 Marking delay requested by locator and agreed to by excavator.
- 96 No locate required.
- 97 Extraordinary circumstances exist.

Subcode Policies

The following policies have been formulated by the Commission's Damage Prevention Advisory Committee in an attempt to clarify the use of certain subcodes.

Subcode 70

Subcode 70 shall only be used when the operator's presence is necessary during the excavation due to the fact that the underground utility line is of such importance to the utility's system operation that an outage of such a facility will have significant impact on the company's operation and its customers. Such facility must be marked.

When a locator responds to a ticket with a subcode 70, it shall be the locator/operator's responsibility to provide the excavator with the appropriate name and contact information for the excavator to use to inform the operator of the date and time when the excavation will commence. Operator must be present during excavation.

Subcode 71

Subcode 71 shall only be used when the operator's presence is necessary during the excavation due to the fact that the underground utility line is of such importance to the national security that marking it in accordance with the Underground Utility Damage Prevention Act is not appropriate.

When a locator responds to a ticket with a subcode 71, it shall be the locator/operator's responsibility to provide the excavator with the appropriate name and contact information for the excavator to use to inform the operator of the date and time when excavation will commence. Operator must be present during excavation.

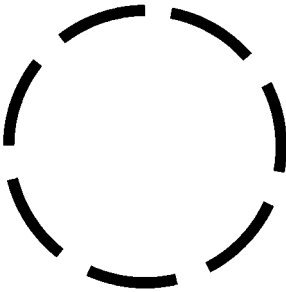
Subcode 90

When a locator responds to a ticket with a subcode 90, it shall be the locator's responsibility to inform the excavator of the locator's inability to gain access to the property to mark the area of excavation. The locator shall inform the excavator before the response to the ticket is due on the excavator-operator information exchange system. It shall be the excavator's responsibility to make the property accessible to the locator and call a new ticket, for those operators who initially responded to the ticket with a subcode 90, if necessary.

Virginia White Lining Best Practices

In the event a specific description of a location of excavation cannot be given, the route or boundary of the excavation site shall be marked by white paint ("white lining"), if practical.

1. Excavators are encouraged to use white lining, when practical, to show the locators the area where excavation will take place. This will reduce the need to precisely describe the area of planned excavation in words, reduce unnecessary work locating underground utility lines that are not involved in the excavation area and reduce unnecessary paint on our streets, roads, sidewalks, etc.
2. For single point excavation, mark (using white paint) the area by the use of dots or dashes to show the operators/locators the area of excavation. If necessary, use white flags. If utility markings are desired outside a white lined area, the excavator shall provide clear instructions (including distance in feet outside the white lined area) to the notification center. Instances where this would be desirable are installing poles, pedestals, manholes, landscaping, etc.



3. For continuous excavation (trenching, boring, etc.), mark the center line of excavation with dots or dashes. Excavation width (in feet) shall be indicated on either side of the center line in legible figures or noted in the marking instructions given to the notification center.

| 2'



| 2'



Local Damage Prevention Committees

Local damage prevention committees are groups of stakeholders who are concerned about preventing damage to underground utilities.

By becoming an active member, you will have the opportunity to discuss, in an informal setting, your concerns and ideas related to preventing damage to underground utility lines, and become part of a local and statewide network of stakeholders through which important damage prevention information is communicated quickly and effectively.

Additionally, your local damage prevention committee fosters partnership! Developing partnerships with other stakeholders can result in open communication, problem solving and avoiding conflicts.

There is no cost to become a member, and in fact, regular participation at meetings builds "educational credits." Educational credits can be applied to reduce the amount of a potential civil penalty associated with a violation of the Miss Utility Law!

Local damage prevention committees meet on a regular basis in the following five geographic areas of the Commonwealth:

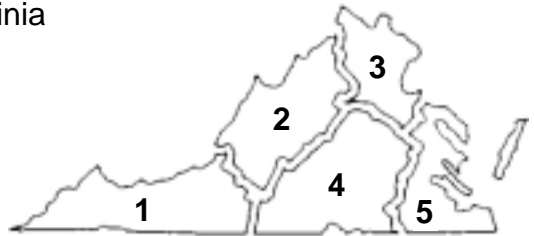
Area 1: Southwestern Virginia

Area 2: Western Virginia

Area 3: Northern Virginia

Area 4: Central Virginia

Area 5: Eastern Virginia, including the Eastern Shore



For more information on the next meeting in your area, contact the Virginia State Corporation Commission at 804.371.9980, or visit Miss Utility on the web at www.missutilityofvirginia.com (hyperlink "Events").

APWA Color Codes



RED - Electric Power Lines, Cables, Conduit and Lighting Cables



YELLOW - Gas, Oil, Steam, Petroleum or Gaseous Materials



ORANGE - Communications, Alarm or Signal Lines, Cables or Conduit



BLUE - Potable Water



PURPLE - Reclaimed Water, Irrigation and Slurry Lines



GREEN - Sewer and Drain Lines



PINK - Temporary Survey Markings



WHITE - Proposed Excavation

Miss Utility's Statewide Telephone Numbers:

Miss Utility1-800-552-7001

Check Ticket Status1-800-552-3120